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IMPACT OF CULTURE ON FIELD INDEPENDENCE / FIELD DEPENDENCE AS A FUNCTION OF LEARNING STYLES

Abstract

This paper develops a framework for understanding the relationships between approaches to learning adopted by students in the context of higher education and the concept of field dependence/field independence. This is a cognitive variable that affects the learning style of the individual. Sometimes it is referred to as global versus analytic thinking and it reflects on how learners think and process information. The field dependent learner is one who processes information globally. This learner is less analytical, not attentive to detail, and sees the perceptual field as a whole. This whole resists analysis or decomposition. The field independent person on the other hand can easily break the field down into its component parts. He/she is typically not influenced by the existing structure and can make choices independent of the perceptual field. There is very little disagreement that a relationship does exist between the culture in which children live (or from which they are descended) and their preferred ways of learning. This relationship, further, is directly related to academic, social, and emotional success in school. We will look at how students vary along the continuum of field dependence/field independence as a direct consequence of belonging to a particular culture. Our ability to give every child a chance to succeed in school depends upon a full understanding of culture and learning styles. After all, effective educational decisions and practices must emanate from an understanding of the ways that individuals learn. Consequently, knowing each student, especially his or her culture, is essential preparation for facilitating, structuring, and validating successful learning for all students.

Introduction

Psychologists have long been aware that people differ in the consistent ways in which they receive and respond to information. Some make careful distinctions between stimuli, whereas others blur distinctions, and some may typically prefer to make broad categories, whereas others prefer narrow ones for grouping objects. These consistencies in an individual seem to be fairly stable across time and even across situations. They have been referred to as cognitive controls. Combinations of several cognitive controls within a person have been referred to as cognitive style, of which there can be numerous variations.

There appears considerable confusion in the literature concerning the terms cognitive and learning styles. Numerous authors and researchers use the terms interchangeably. However, various authors draw a distinction between cognitive and learning style. Learning styles refer to ways that people learn information, and cognitive styles are more global, referring to the way that people see the world around them and interact with it (Jonassen & Grabowski, 1993).

Learning styles are less specific than cognitive styles. Because learning styles are based on self-report measures, validity is one of the most articulated problems. Moreover, as speculated by some researchers, "...learning styles may not be legitimate research tools, "... they are useful methods for eliciting self-reflection and an understanding of the learning process" (Jonassen & Grabowski, 1993; p. 234).

There are various recognized cognitive styles available in the literature, among which are visual/haptic, visualizer/verbalizer, leveling/sharpening, serialist/holist, and field dependent/independent. This paper will focus on only the field dependent / independent style.

According to Witkin and Goodenough (1981), people are termed field independent (FI) if they are able to abstract an element from its context, or background field. In that case, they tend to be more analytic and approach problems in a more analytical way. Field dependent (FD) people, on the other hand, are more likely to be better at recalling social information such as conversation and relationships. They approach problems in a more global way by perceiving the total picture in a given context.

Daniels (1996) summarizes the general tendencies of field dependent and independent learners as follows:

Field-dependents:

- Rely on the surrounding perceptual field.
- Have difficulty attending to, extracting, and using non salient cues.
- Have difficulty providing structure to ambiguous information.
- Have difficulty restructuring new information and forging links with prior knowledge.
- Have difficulty retrieving information from long-term memory.

Conversely, field-independents:

- Perceive objects as separate from the field.
- Can disembed relevant items from non-relevant items within the field.
- Provide structure when it is not inherent in the presented information.
- Reorganize information to provide a context for prior knowledge.

- Tend to be more efficient at retrieving items from memory

Field Dependency and Academic Achievement

Bassey et. al. in their study have cited Murphy, Casey, Day, & Young (1997) & Cakan, (2000) and stated that cognitive style has been reported to be one of the significant factors that may impact students' achievement on various school subjects. In another research study, Dwyer and Moore (1995), as cited by Bassey et.al. investigated the effect of cognitive style on achievement with 179 students who enrolled in an introductory education course at two universities in the United States. They found the field independent learners to be superior to field dependent learners on tests measuring different educational objectives. The researchers concluded that cognitive style had a significant association with students' academic achievement.

Bassey et.al. again cite research by Tinajero and Paramo (1997) who investigated the relationship between cognitive styles and student achievement in several subject domains (English, mathematics, natural science, social science, Spanish, and Galician). With the sample of 408 middle school students, the researchers asserted that cognitive style was a significant source of variation in overall performance of students. That is, field independent subjects outperformed their field dependent counterparts.

It has also been found that analytic cognitive style had significant effect on student's achievement in chemistry than relational and inferential styles. Independent subjects score higher than dependent ones in English Achievement Test. Independent learners are those who can do extensive reading and writing on their own and tend to depend less on teachers and other learners.

A field independent student can identify and manipulate the parts that comprise the whole, while the field dependent student has difficulty identifying the various parts and needs additional input to manipulate them. This is an extremely salient point to a second language learner, as most language curriculum requires a student to be able to manipulate words in a sentence in various patterns and combinations. If a student

cannot find the patterns, they cannot manipulate the words as required, and frustration and lack of understanding are the result.

Some other academic connections are as follows:

- FI attained higher mathematics achievement across grades (Vaidya & Chansky, 1980);
- FIs scored better on music compare to FDs (King, 1983);
- FI recalled significantly more from mathematical/scientific passages but FD recalled more from socially oriented passages (Phifer, 1983);
- FIs recalled more structural and functional information (equipment parts) than FDs (Skaggs, Rocklin, Dansereau, & Hall, 1990);
- FIs achieved more on performance-based assessments than did FDs (Lu & Suen, 1995);
- Most FI teachers gave FI students higher grades than FD students did; and most FD teachers assigned the highest grades to FD students (James, 1973);
- FI children learned mathematics better from a FD teacher than a FI teacher (Packer & Bain, 1978)

Impact of culture on cognition

A cultural perspective on cognition assumes that humans are not only prepared biologically with a variety of physiological and psychological components but also with socially shaped propensities. Hence, the human psychological profile is formed through biological, social, and cultural processes. This profile includes particular ways of adaptation and adjustment to one's socio-cultural environment. The socio-cultural shaping of cognition may transpire in the production of action in particular ways in each culture. An assortment of interpersonal and social factors in various cultures may be significant predictors of cognition.

Anthropological and psychological studies of general cognitive processes continue to suggest that cognitive styles are connected to culture (Chen & Ford, 1998; Chen & Macredie, 2002; Lucy, 1992; Luria, 1976; Nisbett, & Norenzayan, 2002; Nisbett, Peng, Choi, & Norenzayan, 2001; Riding & Rayner, 1998; Wood, Ford, Miller, Sobczyk, & Duffin, 1996). As contextually influenced processes of learning develop over time, the mind forms particular styles of planning, strategizing, and problem-solving based on inherent patterns of organized information (Goldstein & Blackman, 1978).

This is particularly well illustrated by Nisbett and Norenzayan (2002), who found that "cultures differ markedly in the sort of inferential procedures they typically use for a

given problem" (p. 2). Reviewing a range of studies dealing with linguistics and mathematics, they uncovered the variable differences in knowledge domains, analytical processes, and learning skills (such as deductive rules and schemes for induction and causal analysis) in diverse cultures, and showed how these processes operate on different inputs, for different people, in different situations and cultures. For example, discussing Lucy's study (1992) on how linguistic differences in number marking patterns affect thought among the Yucatee Maya, Chinese, Japanese, and English, Nisbett and Norenzayan (2002) state that, "consistent with the lexical structures of these two languages, Yucatee speakers showed a preference for material-based classification, whereas English speakers showed a preference for shape-based classification" (p. 8).

The results of some studies substantiate that cognitive differences at the design level exist in the form of cultural styles that are perceptible to users. Awareness of cultural cognitive style is necessary for the improvement of online communication.

Ethnicity was the strongest predictor of cognitive style in numerous studies. The cultural background of an individual and the degree to which the individual endorses cultural values moderate activation in brain networks engaged during even simple visual and attentional tasks. Behavioral research has shown that people from Western cultural contexts perform better on tasks emphasizing independent (absolute) dimensions than on tasks emphasizing interdependent (relative) dimensions, whereas the reverse is true for people from East Asian context.

Whereas Japanese were more accurate in the relative task, Americans were more accurate in the absolute task. Moreover, when engaging in another culture, individuals tended to show the cognitive characteristic common in the host culture.

Cultural differences arise from culturally different viewing patterns when confronted with a naturalistic scene. Measuring the eye movements of American and Chinese participants while they viewed photographs with a focal object on a complex background, researchers found, the Americans fixated more on focal objects than did the Chinese, and the Americans tended to look at the focal object more quickly. Thus, it appears that differences in judgment and memory may have their origins in differences in what is actually attended as people view a scene.

Researchers examined holistic cognitive tendencies in attention, categorization, and reasoning in three types of communities that belong to the same national, geographic, ethnic, and linguistic regions and yet vary in their degree of social interdependence: farming, fishing, and herding communities in Turkey's eastern Black Sea region. As predicted, members of farming and fishing communities, which emphasize harmonious social interdependence, exhibited greater holistic tendencies than members of herding communities, which emphasize individual decision making and foster social independence. These findings have implications for how eco-cultural factors may have lasting consequences on important aspects of cognition.

Other research suggests that (a) traditional East Asian art has predominantly context-inclusive styles, whereas Western art has predominantly object-focused styles, and (b) contemporary members of East Asian and Western cultures maintain these culturally shaped aesthetic orientations. The findings can be explained by the relation among attention, cultural resources, and aesthetic preference (Masuda, 2008).

Culture and FD/I

A study analyzing the relationship between ethnic or other subgroup membership and the individual's cognitive style found that the Jewish subculture were more field dependent than the white Anglo-Saxon Protestant.

Clear difference could be found between the two types of cultures; that is, U.S. and German (individualistic cultures) participants were more field independent than were Russian and Malaysian (collectivist culture) participants

Field dependence / Independence are associated with cultural variation. Witkin & Berry (1971) identified 4 antecedents of Field dependence / Independence : ecology, social pressure, socialization and biological effects. Ecological adaptation refers to the characteristic relationship between man and nature. Ecological demands force members of a society to develop certain characteristics and perceptual abilities. For example hunters need to locate food and return safely to their homes. Since they need to distinguish the stimuli from the environment they are field independent.

Social pressure refers to social conformity and social stratification. In some societies such pressures are few allowing self-control to operate. Field independent

societies can be differentiated from field dependent societies on the basis of family structure (nuclear vs. extended) social structure (egalitarian vs. hierarchical stratified) and social relation patterns (reserved – fragmented vs. dependence integrated) Agriculturalists who cultivate land and become permanent residents develop tighter relationships than hunters. They live in extended families and develop interdependence. Child rearing style can be either person/status oriented or the growth nurturing style which encourages field independence.

Finally, we can say, field dependence is characterized in cultures where adherence to authority and strict socialization norms are common; field independence is characterized in cultures that encourage autonomy, have more lenient child rearing practices and have loose social organization.

Psychological Differentiation

Field independence/field dependence deals with the amount of psychological differentiation experienced. Differentiated systems are more complexly organized. The relationships between the system and the environment are more elaborate. Witkin and Goodenough (1981) describe the differentiation process as one of the creation of inner boundaries between the inner core of the self and the environment. Psychological activities also have boundaries and are separated from each other and the environment.

Differentiation creates a hierarchical structure forming an articulated system. Field independence requires a restructuring of the perceptual or psychological field and therefore is a more differentiated process. According to Witkin and Goodenough (1981) field dependent learners are more socially oriented than field independent learners. They pay more attention to social cues, they like to be with others and they seek learning and vocational experiences that put them in contact with people. Field dependent children perform less well on formal operations tasks than do field independent children, Brodzinsky (1985). Other researchers support this. For example: children, according to Witkin and Goodenough (1981), are more field dependent than are adults.

There is a general movement toward field independence across development, but there are also great individual differences. Those who develop more rapidly toward field independence also develop greater competence in cognitive restructuring.

Interestingly evidence is presented (from primitive agricultural and nomadic herding societies) which indicates that there is genetic selection of field independent subjects in primitive settings and that more are field dependent as the culture grows and becomes more modern.

Conclusion

Based on the above researches, we can conclude that understanding the socio cultural background of students is as important as understanding the subject one is teaching them. The kind of educational cues provided, the nature of learning tasks and the structure of assessment and evaluation can all be modified to ensure greater academic achievement of the students.

We must remember that although Indians are generally considered to be a collectivist culture, there are individualistic cultures within this country. As Westernization entrenches itself further in our midst, the move towards an individualistic and therefore field independent way of thought is become more common. With the recent legislation allowing foreign universities to set up shop, we can look forward to an amazingly multi cultural student population. Teaching in such a set up will definitely add to the existing challenge of teaching our own multi-cultural population. Knowing how culture affects learning patterns will help us make teaching and learning relevant, efficient and productive.